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Policy

The U. S. Navy Medical News Letter, is basically an official Medical Department publication inviting the attention of officers of the Medical Department of the Regular Navy and Naval Reserve to timely up-to-date items of official and professional interest relative to medicine, dentistry, and allied sciences. The amount of information used is only that necessary to inform adequately officers of the Medical Department of the existence and source of such information. The items used are neither intended to be, nor are they, susceptible to use by any officer as a substitute for any item or article in its original form. All readers of the News Letter are urged to obtain the original of those items of particular interest to the individual.

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The Abortion Problem

The frequency of spontaneous abortions is not accurately known. This information is difficult to obtain because many women—especially those who have already had several children—often do not consult a doctor when they know they are having an abortion unless they become alarmed by the bleeding. Even if every woman who lost a pregnancy consulted a physician, there would still not be an accurate figure because some pregnancies end before the woman knows that she is pregnant.

Among women admitted to a hospital, the number who abort seems to be fairly constant around 10%. A study of six American cities made in 1950 showed a variation from 7.2 to 10.7% with an average of 9.7%. This same percentage is found at the Chicago Lying-In Hospital where, among 10,818 patients admitted in the last 3 years, 1057 were recorded as having spontaneous abortions. When 3342 of these women who had already had at least one pregnancy were carefully questioned about past spontaneous abortions or deaths of fetuses before birth, it was found that they had had a total of 6804 pregnancies. Of these, 19% had ended in abortion and in an additional 4% the child was born dead or died soon after birth. These women had, consequently, lost almost one-fourth of their pregnancies.

The difference in the proportionate number of pregnancies ending in spontaneous abortion as obtained by history and direct observation of patients in a hospital is believed to be due to the large number of women who abort but do not require hospitalization.

Because of the patient's reluctance to acknowledge a criminal abortion, it is not always possible to tell how many abortions thought to be spontaneous may actually be a result of this procedure. The Kinsey report showed that only 17% of women having criminal abortions are subsequently hospitalized. One-third of these had the type of severe infection that can usually be recognized as caused by criminal abortion. Even if it were assumed that none of

the criminal abortions were recognized as such and were thought to be spontaneous, it would alter the frequency of those observed in any hospital by less than 3% of the total deliveries — if the Kinsey figures are correct.

If a 2% loss from stillbirth is added to (1) the 20% figure arrived at by Baumgartner and Erhardt, (2) the 19% rate noted by the Chicago Lying-In Hospital figure, or (3) the Kinsey Institute figure of 17%, the total loss before birth (excluding criminal abortions) is at least 20% of conceptions. In 1955, 4,104,112 infants were born alive in the United States. If one-fifth of the total number of pregnancies terminate in the delivery of a dead fetus, there is the staggering total of one million such deaths. And, if the Kinsey report represents an adequate sample, another million babies are intentionally sacrificed.

Knowing the approximate number of spontaneous abortions, the next question is "What is the cause?" In an individual case this is difficult to determine. Jeffcoate and Wilson of the University of Liverpool say that a specific cause can be found for only 15% of abortions. Most other investigators add that their figures are not much higher than this.

The uterus will not hold a pregnancy for more than a few weeks unless it is fairly normal. If the embryo dies or is sufficiently abnormal, the uterus will expel it. The embryonic sac develops normally only when it contains an embryo, but it may actually grow for about 3 months with a very abnormal embryo or with none at all. For this reason, more abortions occur at 10 to 14 weeks than at any other time.

To find how many fetuses were aborted because they were abnormal and how many because of some other condition, Hertig and Livingston examined the material passed during the course of 1000 abortions. This is important in order to know whether an attempt should be made to prevent an abortion when symptoms first appear or whether it would be better to let nature take its course. With a sufficiently abnormal pregnancy, treatment would do nothing except delay the inevitable expulsion.

Hertig and Livingston found that only 26% showed anatomically normal embryos and that not more than two-thirds of these were alive when the patient was first seen by a doctor. In the majority, the sac contained no embryo or only a stunted rudiment.

The author examined similar material from 1500 women at the Chicago Lying-In Hospital and found the number of normal embryos even less. In only 20% were normal embryos present and over one-half of these had been dead for a considerable period of time prior to abortion. Probably less than 10% of the total could have been saved by any form of treatment.

The symptoms indicating that a pregnancy is in danger of being lost are bleeding and uterine cramps. The first symptom is usually bleeding. What proportion of women who have bleeding early in pregnancy abort and what proportion finish pregnancy with a normal baby?

In a study of 5000 women who had a baby at the Chicago Lying-In Hospital, 488 (about 10%) had some bleeding during the first 6 months. About

three-fourths of this occurred in the first 3 months. In 90%, pregnancy ended in the birth of a living mature infant; in 5%, a living premature infant; in only 5% did the child die. Simultaneously, there were 491 women admitted to the hospital with similar symptoms who did abort. This almost equals those who threatened to abort but did not. The authors conclude that in about one-half of the women the symptoms grew worse and the abortion was completed. In the other half, they subsided and a normal infant was subsequently delivered.

If abnormal development is responsible for abortion, the abnormality may be intrinsic in the egg or sperm, or may be a result of the environment in which growth takes place. If the cause is intrinsic, it must be something inherited or something injuring the egg or sperm before or at the time they unite.

Even though disease of the endometrium is no longer thought to be responsible for abnormal development, other conditions may adversely affect a young embryo. Local infection can rarely be demonstrated as a cause, but generalized infections—especially those producing high fever such as typhoid fever—may lead to death of the embryo. Brucellosis may cause abortion in mares, cows, and other animals, but has never been known to produce abortion in women. Syphilis may be responsible for stillbirth, but it probably does not cause abortion.

Although viruses rarely have been found to cause abortion in humans, they may cause abnormality in development. The action of rubella is best known. It is also possible that virus not yet recognized may lead to very early embryonic death. Poliomyelitis is one of the few viral diseases that has been carefully studied and an increased frequency of abortion has been found.

Certain poisons may cause abortion, notably lead. In 1905, when the harmful effect of this mineral was just being recognized, the French Department of Labor reported that 60% of 1000 pregnancies in lead workers resulted in abortion. Poisoning of either the father or the mother gives the same result and abortion is probably due to the very early death of the embryo. After recovery from lead poisoning, pregnancies again become normal.

Many conditions have been suggested as occasional causes of abortion. Among these are incompatibilities between blood groups of mothers and infants. Actually, there is no evidence that either AB or Rh incompatibility is a cause of abortion. In some instances, abortions appear to be the cause of maternal isoimmunization, inasmuch as certain studies have shown that more than an average number of abortions occur prior to the first recognition of Rh immunization, but not afterward.

A growing interest in psychosomatic medicine has led to an increasing interest in the possible role of the emotions in producing abortions. Whether this contributes to the production of an abnormal embryo or leads to direct expulsion of a normal embryo has apparently not been discussed.

Because there is a well established relationship between emotions and menstruation and emotions and fertility, there is a belief that a relationship

between emotions and abortions must also exist. Disturbances primary in the uterus that have been occasionally thought to contribute to early termination of pregnancy include: underdevelopment or malformation of the uterus; backward displacement; tumors commonly known as "fibroids"; and a weak cervix which relaxes and lets the pregnancy protrude. Trauma, such as a severe blow on the abdomen, may injure a child late in pregnancy but probably almost never causes an abortion. Travel by any mode of transportation has been definitely disproven to cause abortion.

It is evident that because many abortions have their origin extremely early—sometimes even before pregnancy is recognized—prevention, to be effective, must begin before conception occurs. To have the fewest possible unsuccessful pregnancies, every man and woman about to have a child should be in a state of maximum physical and emotional health and should lead lives temperate in all things. Because there are many causes of abortions and in any particular case it is often impossible to determine the cause while the abortion is still in progress (or for that matter, even after it is completed), and because most often the next pregnancy proceeds to a normal termination, there are many arguments in favor of permitting a continuance of a normal way of life during the time abortion threatens.

The majority of physicians realize that when bleeding is due to some cause other than an impending abortion, it will ordinarily subside spontaneously and any treatment given generally will make no difference in the outcome. Often, it is felt that women need some type of treatment for the psychologic effect it exerts. Some women expect to be told to stay in bed and to be given some variety of hormone; if such a recommendation is not made, the majority will consult another doctor.

When a woman has had one abortion, it is generally attributed to chance, that is, she is thought to have temporarily experienced some one of the conditions causing the abortion. When she has had three abortions, she is generally put in a special group called "habitual aborters," in the belief that she has some condition that is repeating itself and is keeping her from carrying a pregnancy a normal length of time.

Many years ago, Malpas examined the records of patients who had had several abortions and concluded that after a woman had had three she had only a 27% chance of normal pregnancy in the fourth. Later, Eastman gave such a woman only a 16% chance of a normal pregnancy.

More recently, Speert decided that neither of these conclusions was based on sufficient evidence. He studied the records at the Sloane Hospital in New York and found that among 121 women who had had three or more spontaneous abortions, 81% had a living child in the next pregnancy regardless of the variety of treatment or whether any treatment at all was given.

In spite of Speert's report, most investigators who try out various procedures to prevent abortion quote Eastman's figures and consider that when more than 16% of women have a successful pregnancy after having had three abortions, the treatment they have prescribed must have been responsible.

Too often, in looking for a cause of habitual abortion, it seems to have been assumed that all abortions in this category must be due in all women to a single cause and that if it could be found, all could be prevented. One can be surprised at the many different forms of treatment that have been tried and also at the large share that have been reported as being about 80% successful. This great variation in treatment gives evidence of how unsatisfactory any course yet recommended has been in preventing abortion in all women and suggests that women who seem to abort habitually are actually no different from other women, that in about 15 to 20% of all pregnancies abortion will occur regardless of treatment and whether or not there have been previous abortions.

The fact that so many methods of treatment have been reported to give about 80% success has led some doctors to conclude that there may be no specific treatment that affects the course of a pregnancy and that whatever effect may be obtained is of psychosomatic origin. The patient's symptoms are allayed by the confidence the physician's words engender when he tells her that his treatment will prevent abortion.

Also, there are physicians who are somewhat less optimistic about the effect of any treatment—even psychosomatic—and point out that in cases where no treatment of any kind has been given the outcome is just as satisfactory.

The one point on which there is almost complete agreement is that when bleeding begins, it is already ordinarily too late for any variety of treatment to do much good. To be effective, any treatment designed to prevent abortion must be instituted before pregnancy begins. This means preconceptional care.

Preconceptional care has the same relation to prevention of abortion that prenatal care has to the prevention of perinatal mortality. To be successful, both must be instituted before difficulties begin. More and more attention is being given to the need for preconceptional care and in some places clinics are being established for such a purpose. Some doctors like Aaron and his colleagues do not refer patients to these special clinics until after two abortions, while others believe that every woman wanting to have children should have a thorough examination and the benefit of good medical care before first becoming pregnant.

Premarital examinations are required in many states to determine the possible existence of venereal disease. Ideally, all couples about to be married would have a real examination that would determine their fitness to become parents from both psychologic and physical aspects, and which would permit correction of remediable factors before or soon after marriage. Only in such a way can a decrease in the number of abortions in first pregnancies be hoped for.

When a woman has had an abortion, the attempt to prevent a repetition should be made before the beginning of the next pregnancy—not after the symptoms appear. Preconceptional care can be expected to decrease the

number of abortions, just as prenatal care has decreased the number of stillbirths and infant deaths. Abnormalities of the uterus may be corrected, inadequate thyroid secretion can be replaced, and vitamin deficiencies can be overcome. It can even be hoped that abnormal development of the embryo and its sac may be prevented by improving the total health of the patient. (Potter, E. L., The Abortion Problem: GP, XIX: 105-113, April 1959)

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Pregnancy after Ligation of the Inferior Vena Cava

The authors report their observations of 47 instances of pregnancy subsequent to ligation of the inferior vena cava and ovarian vessels. Since 1941, members of their department have ligated the inferior vena cava and ovarian veins of 140 women. Twenty-three of these women are known to have become pregnant subsequent to ligation.

The case histories indicate that 22 of these patients conceived within 48 months of ligation. One patient did not conceive until 84 months after operation. The earliest conception was within 4 months. The authors emphasize that these 23 women had had severe infection of the pelvic vessels and uterus and that medical regimen had failed to overcome the infections. Ligation of the inferior vena cava and ovarian veins was done as a life-saving procedure.

Pregnancies that were carried successfully beyond 28 weeks were considered viable. These 23 women had 47 pregnancies after ligation of the inferior vena cava and ovarian veins. Thirty of these pregnancies extended beyond 28 weeks. Of these 30 pregnancies, 22 progressed to term, 7 terminated prematurely, and one woman at the time of this writing was 34 weeks pregnant. Patients under the care of private physicians and clinic patients received antenatal care that was no different from the care received by pregnant women who had not had ligation of the inferior vena cava and ovarian vessels.

The clinic patients who had had ligation received no more attention than other clinic patients. In fact, in their antenatal period they were checked by medical students, nurses, interns, or residents. In several instances, they neglected themselves. Some did not report for care until they had had abortions, until their pregnancies were in the last trimester, or even until they were already in labor. These patients were on no special regimen of diet, drugs, exercises, or restriction of activity, nor were they instructed to wear special shoes, stockings, clothing, or supports of any kind. Some of the symptoms and signs particularly sought were claudication, varices of the leg veins, vulvar veins, vaginal veins, hemorrhoids, dilated abdominal veins, or significant edema of the legs or vulva. Observations showed

no significant change from the normal. There were no instances of vulvar or vaginal varices. One patient who had varices of the lower extremities prior to ligation continued to have the same problem and one other patient had a postphlebitis syndrome. No problem of hemorrhoidal veins was described or recorded antenatally or during labor. There were a few recordings of transient 1 plus edema, but in no instance was there significant persistent or progressive edema of the lower extremities. All patients continued their former activities as domestics or housewives or both during and after their pregnancies except when specific problems of pregnancy per se necessitated hospitalization.

Twenty-nine pregnancies were delivered and one patient was due to be delivered in September 1958. Twenty-four deliveries were vaginal. There were 5 cesarean sections. Labor and delivery in the private patients were not remarkable except that 4 of the 5 cesarean sections were in this group. In all but one instance, the clinic patients' labor was under the observation and guidance of medical students, interns, or in a few instances, residents. The exception was one woman who was delivered in a rural house unattended. Only the patients described under the heading of complications had any difficulties in labor and delivery. These were the instances of antenatal bleeding and the case of pre-eclampsia in a private patient. The duration of labor was, in some instances, as short as 45 minutes and in one patient 14 hours. The conduct of labor was the same as for any other patient.

No special techniques, no prophylactic antibiotics or anticoagulants were used nor was any special anesthesia insisted upon. In fact, several types of anesthesia were employed in the 29 deliveries. Some patients had no anesthesia, others local, spinal, or general. The type of anesthesia was determined entirely by the obstetrical status and not by the patient's history of inferior vena cava ligation. The same obstetrical criteria determined the use of forceps and/or episiotomy. In no instance was delivery difficult. The third stage was notable in that in two instances manual removal of the placenta was necessary.

There were 28 single births and one set of twins. Only 2 of the 30 babies did not survive. One patient was still pregnant. Twenty-two babies were considered to be at term. One of these infants was stillborn. The mother had pre-eclampsia. Eight other infants, including the twins, were premature. One of these premature babies died after an unattended birth in a rural home. The heaviest term baby weighed 8 pounds, the smallest premature, 2 pounds. This infant survived. There was one fetal anomaly, bilateral talipes equinovarus and paraplegia. This child lived to the age of 2 years and died of sepsis and malnutrition. The paraplegia was not considered to be due to birth trauma. Studies at the cerebral palsy center did not disclose the cause and autopsy was not obtained.

Pregnancy subsequent to ligation of the inferior vena cava and ovarian veins can proceed in a normal fashion. Interruption of the normal venous

return from the human female reproductive organs does not influence any subsequent antenatal, intrapartal, or puerperal course.

Pregnancy is not contraindicated after ligation of the inferior vena cava and ovarian veins. Special care is not necessary in managing the patients who subsequently conceive. (Collins, J.H., Bosco, J.A.S., Cohen, C.J., Pregnancy Subsequent to Ligation of the Inferior Vena Cava and Ovarian Vessels: *Am. J. Obst. & Gynec.*, 77: 760-769, April 1959)

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Asian Influenza A in Boston
1957 - 1958

In the city of Boston, the pandemic of Asian influenza A was accompanied by an estimated 118 fatalities from influenza and pneumonia in excess of the norm—approximately 38 of them during the first wave in October and November 1957, 42 in the second wave in March and April 1958, and the remainder in the intervening months. This report summarizes the pertinent associated deaths in the Boston area with particular reference to problems of diagnosis and management.

Each case was characterized by one or more of the following criteria: (1) isolation of Asian influenza A virus from antemortem throat washings or postmortem tissues; (2) tracheal, pulmonary, or myocardial pathology consistent with that previously described for influenza; (3) in the absence of previous immunization, significant levels of hemagglutination-inhibiting antibody against influenza A/Japan 305/57 strain and/or of influenza A complement-fixing antibody; (4) specific staining with fluorescein-labeled Asian influenza A antiserum. Three cases were included, although they did not meet the above criteria; each occurred at the height of the epidemic in the fall, presented classical clinical histories and findings of influenza at the onset of disease, and arose in families in which other cases of typical influenza were occurring. This series of cases, therefore, reflects selection on the basis of diagnostic features, hospital admission, and performance of a postmortem examination; the series is also probably weighted with young adults.

On the basis of ante- and postmortem bacteriologic studies, the 32 patients studied were separated into three groups: (a) influenza without bacterial complication ("pure influenza"), 15 cases; (b) postinfluenzal staphylococcal pneumonia, 11 cases; and (c) postinfluenzal bacterial pneumonia nonstaphylococcal, 6 cases. Of the 32 patients, 21 had one or more chronic diseases of major proportions and 4 were pregnant women. Twelve patients including the 3 who died suddenly of nonpneumonic causes had advanced heart disease; 10 had either chronic intrinsic pulmonary disease or chronic respiratory insufficiency secondary to neurologic or neoplastic disease.

There were 18 males and 14 females in the series; pregnant women accounted for the preponderance (9:6) of women in the pure influenza deaths. Males predominated in the groups with postinfluenzal bacterial pneumonia and among the patients with no antecedent disease (6:2).

Fatalities from both influenza and postinfluenzal bacterial pneumonia occurred over a wide range of ages. Although the mean and median ages of the patients with pure influenza were somewhat lower than those with bacterial pneumonia, these differences were not significant.

The cases were characterized by a wide spectrum of modes of onset, symptoms and signs, laboratory findings, rates of progression, and modes of death. However, the many common features permit a general description of a typical fatal course. The onset of the disease in patients who died of pure influenza was characterized by a 6 to 12-hour prodrome of malaise and fleeting myalgias followed by the appearance of fever, chills, headache, severe myalgia, pain on ocular movement, nasal congestion, mild sore throat, and prostration. Between the second and third days of disease there developed dyspnea, hemoptysis, and pleuritic chest pain. Tachycardia, tachypnea, and cyanosis then rapidly ensued with clinical findings of bilateral medium and coarse crepitant inspiratory rales usually involving two lobes and with roentgenographic evidence of involvement of two to three lobes. Both the white blood cell count and the percentage of polymorphonuclear neutrophils were usually either within normal limits or slightly elevated. The subsequent course was marked by rapid worsening of respiratory function, intensification of the cyanosis, frothy hemoptysis and, terminally, shock and signs resembling those of pulmonary edema. Death most commonly occurred about the fourth day after onset of influenza, 24 to 48 hours after the onset of pneumonia, or 12 to 36 hours after severe disease was first clinically recognized.

Analysis of these 32 cases reemphasizes several known facts concerning severe influenza and its complications, suggests the importance of some revisions in current approaches to the severe disease and its management, and underlines the pressing need for improved facilities for management of acute respiratory insufficiency.

The data in this series confirm preepidemic predictions by public health authorities based on experience in previous epidemics: (1) Major population groups particularly susceptible to severe disease (and therefore prime candidates for immunization) were pregnant women and those with chronic heart disease and chronic respiratory insufficiency. (2) Influenzal and postinfluenzal pneumonias were the commonest and most severe complications. (3) Myocarditis was infrequent and generally minimal. (4) The occurrence of hemoptysis, tachypnea, and cyanosis in influenza—with or without prominent pulmonary findings—is highly indicative of potentially fatal disease. (5) Bacterial—particularly staphylococcal—pneumonia, when it occurs in adults following influenza, is generally more severe and more rapidly progressive than under other circumstances.

On the basis of experience with a wide variety of infectious diseases, most authorities have consistently opposed the hasty administration of antibiotics prior to the effective clinical—or preferably bacteriologic—demonstration of a specific pathogen and have particularly decried the indiscriminate use of antibiotics in insusceptible virus infections. Implicit in these sound principles is the tacit assumption that there is enough time to make an accurate diagnosis.

One is forced to the conclusion that in time of epidemic influenza, in localities in which major staphylococcal infections are known to be common, all cases presenting with signs of severe, potentially fatal influenza should be diagnosed and treated promptly as bacterial pneumonias—probably staphylococcal—until the diagnosis is proven otherwise. On the other hand, the data in this series lend no support to the practice of using "prophylactic" antibiotics in uncomplicated influenza. Indeed, as shown in the second article of this series, they contradict it.

The relative futility of standard vigorous supportive measures in preventing eventual asphyxia in the cases reported underscored the need both for a better understanding of pathogenetic mechanisms in fatal influenza and for a practical device which will function as an "artificial lung"—capable of efficient extrapulmonary gaseous exchange of oxygen and carbon dioxide—during periods of acute respiratory insufficiency. Such an apparatus is undergoing development in several laboratories.

Although the data in the present series suggest that the administration of corticosteroids does not significantly alter the course of fatal influenza, the cases are too few in number and the controls too inadequate to state this point with assurance. (Martin, C.M., et al., Asian Influenza A in Boston, 1957 - 1958: A.M.A. Arch. Int. Med., 103: 515-531, April 1959)

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Pulmonary Abscess

Pulmonary abscess has long been recognized as one of the most serious diseases of the lungs and, prior to the availability of the antimicrobial agents, the prognosis was extremely poor both as to morbidity and mortality. With the advent of the sulfonamides, penicillin, and the other antimicrobial agents, and with the development of better techniques in the field of pulmonary surgery, the prognosis for these cases has greatly improved.

This article presents a study of 70 consecutive cases of pulmonary abscess treated at the Veterans Administration Hospital, Louisville, Ky., during the past 10 years. Abscesses resulting from tuberculosis, fungus, parasitic infection, and carcinoma constitute special categories and were purposely omitted from this study. All cases of pulmonary abscess in this series were referred to the Chest Therapy Board for evaluation and recommendations as to treatment.

The initial plan of management was to place the patient on bed rest and, after sputum specimens had been collected for culture, an antimicrobial agent was started. The preference of the Medical Service was to start patients on penicillin alone, usually in a dosage of 100,000 units of crystalline penicillin every 3 hours, or 600,000 units of procaine penicillin twice daily. This was not a fixed policy, however, and the responsible physician could use any antibiotic alone or in combination which he felt desirable, particularly if the patient had received antibiotic therapy prior to admission. Subsequent antibiotic therapy was dictated by the clinical response and the results of bacteriologic determinations including sensitivity studies. Auxiliary supportive measures which were employed as indicated were postural drainage, bronchodilator drugs, expectorants, blood transfusions, and a nutritious diet. Necessary procedures for the recognition and amelioration of coexisting pulmonary and systemic diseases were carried out.

The response of the abscess to medical treatment determined whether surgical treatment was indicated. In general, surgery was believed to be indicated if the abscess persisted or if carcinoma was suspected.

Of the 70 patients with pulmonary abscess, 59 were white and 11 were Negro. There was a uniform distribution in each 10-year period from 20 to 60 years of age. Only 5.7% were beyond 60 years of age. All were males.

The duration of symptoms prior to admission varied from one month or less to 26 months. Thirty patients (42.8%) had had symptoms one month or less. Fifty-six patients (80%) had had symptoms 5 months or less. Five patients (7.2%) had had no symptoms prior to admission. Three of these 5 developed abscesses after admission to this hospital.

Seven patients had severe oral sepsis, 5 had diabetes mellitus, 4 were chronic alcoholics, 3 had neurological disease, and 2 had cerebral arterial thrombosis. Fifteen patients had one each of the following disorders: post-tonsillectomy, thrombophlebitis, dorsal kyphosis, arteriosclerotic cardiovascular disease, old chest injury, upper gastrointestinal hemorrhage of unknown cause, anxiety reaction, chronic pancreatitis, periarteritis nodosa, syphilis, lymphatic leukemia, cirrhosis, fracture, malnutrition, and coronary insufficiency.

Forty-four patients were treated medically. As soon as the abscess was diagnosed, sputum was submitted to the laboratory for smear and culture for predominating organisms and sensitivity determinations. An antibiotic was commenced immediately without awaiting the results of the foregoing studies. The choice of an initial antibiotic varied and the selection was influenced by the preference of the ward physician and the consultant staff. In 21 patients, penicillin was used alone; in 12, penicillin plus a tetracycline drug was administered; in 3 patients, penicillin plus streptomycin was used; and in one patient, a tetracycline drug alone was used. In another single instance, because of the consideration of possible tuberculosis, streptomycin plus isonicotinic acid hydrazide was given.

The policy was that medical therapy be given to the patient with an uncomplicated case to the point where no further improvement was considered probable. When carcinoma was suspected or when surgical complications existed, surgery was advised earlier.

The proper use of antibiotics is essential to the effective management of pulmonary abscess. The studies emphasize the need for identification of the offending organisms at the onset of therapy and the need for subsequent studies of the sputum, preferably at weekly intervals, to detect the development of bacterial strains that are resistant to the antibiotic being employed. There were 4 patients whose original cultures grew Friedländer's bacilli. These organisms were not sensitive to penicillin. There were 2 patients in whom the initial cultures revealed both a streptococcus and Friedländer's bacilli and, with subsequent cultures, sensitivity determinations, and clinical correlation, the Friedländer's bacillus was felt to be the offending organism. In 3 patients, hemolytic *Staphylococcus aureus* was not isolated initially but was subsequently cultured. This organism was resistant to penicillin. In all of the foregoing cases, the employment of an antibiotic to which the organism was sensitive was of vital importance.

The selection of patients for surgery is an individual problem. The authors considered the indication for surgery to be the conclusive demonstration that medical therapy had failed. They believe that medical therapy of only 1 to 2 weeks is inadequate and that if any degree of improvement can be demonstrated, medical therapy should be continued. In addition, the authors believe that operation should be performed if the presence of carcinoma is suspected or if there exist or develop complications which are considered to be surgical, such as rupture of the abscess, empyema, bronchiectasis, or bronchostenosis.

It is to be noted that 3 of the 4 patients who had a pneumonectomy died during surgery or in the immediate postoperative period. It has been stressed by other workers that this procedure for pulmonary abscess carries with it a high incidence of complications and a high mortality rate.

The use of antibiotics and the development of better anesthesia and surgical techniques have substantially improved the prognosis in pulmonary abscess. However, it still remains a serious problem. In this series, approximately 70% of the patients required hospitalization of from 1 to 4 months. In 20%, it exceeded 5 months. In 17.1%, the disease terminated in death. Thus, in spite of medical progress, pulmonary abscess continues to be a prolonged morbid process with a substantial mortality rate. (Pickar, D. N., Ruoff, W. F., *Pulmonary Abscess - A Study of 70 Cases: J. Thoracic Surg.*, 37: 452-459, April 1959)

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Pulmonary Function in Bilateral Resection

In recent years, bilateral pulmonary resection has become an accepted adjunctive form of treatment for pulmonary tuberculosis. Frequently, it is undertaken as an initially planned procedure in selected cases when definite indications exist and respiratory function is found to be adequate. In other cases, it is considered but not decided upon until the patient fully recovers from the first resection and pulmonary function is again carefully assessed. In connection with this latter group, it often becomes vitally important to obtain accurate information concerning the amount of remaining respiratory reserve. This applies also in certain complicated cases with already significantly impaired function in which resection on one side only might reduce respiratory reserve to a critical level.

In addition to presurgical clinical assessment of the functional status of the individual, much help can often be derived from certain ventilatory tests when performed carefully and intelligently, using acceptable apparatus. In borderline cases, this testing should include bronchspirometry as well as the more standard methods of determining the total function.

Changes in pulmonary function following unilateral resection for tuberculosis have been studied and recorded by several investigators. It has been conclusively demonstrated that resection of diseased tuberculous segments, including lobectomy, often produces rather small, if any, reduction in pulmonary function in uncomplicated cases.

Although bilateral resection for pulmonary tuberculosis has been employed fairly extensively since 1953, there have been few published studies relating to pulmonary function changes. The present study was undertaken primarily to determine as accurately as possible the degree of change in pulmonary function following bilateral resection of varying extent.

Twenty-nine patients who had had bilateral pulmonary resection of tuberculous lesions between June 1955 and February 1958 were selected for study. This number was part of a group of more than 60 who had bilateral resections performed at the Nova Scotia Sanatorium since 1953, a review of which is to be published in the near future. Only the 29 selected for this study had complete and identical ventilatory testing performed. All subjects had received previous bed rest and antimicrobial therapy for varying periods. Six had relaxation procedures performed at some time prior to surgery, two had had pneumothorax on one side a few years earlier, and four had pneumoperitoneum for at least a year. In all cases, these procedures had been abandoned by the time of their first resection. None had a previous thoracoplasty or phrenic nerve operation.

Sixteen subjects were males; their ages ranged from 17 to 49 years with the majority in the 20 to 39 age group.

Nineteen patients had tuberculous disease classified as moderately advanced at the time of admission. The disease to be resected was located

in the upper lobes, bilaterally, in all 29 patients. The indications for surgical intervention were residual fibrocaseous nodular disease, persisting cavitation, and bronchiectasis, or a combination of these types of disease. Disease known to be unstable and the presence of tubercle bacilli in the sputum influenced the decision regarding surgery in many instances.

The extent of the operations varied considerably. A bilateral single-wedge resection was the combination in 10 patients. In 8 patients, one lobe and one wedge were resected; in 4 patients, one segment and one wedge were resected. A lobectomy with two segmental resections was performed in 2 patients; a lobectomy with one segmental resection in 2 others. The remaining 3 patients had resection of: two segments and one wedge, one segment and two wedges, and three wedges. The most extensive resections were a lobectomy on one side and two segments on the other performed on 2 patients. In all, 12 patients had lobectomies on one side. An "in-between" group of 7 patients had one or two wedges resected on one side and either two wedges, two segments, one segment, or a segment and wedge on the other. The interval between operations varied from 10 weeks to 10 months with an average of 5 months.

As determined by ventilatory tests employed, the reduction in pulmonary function in this series of patients was small. The vital capacity decreased appreciably more in the major resection group (those having lobectomy) than in the minor, less extensive, resection groups. This finding differs from that of Taylor and associates who concluded that the vital capacity loss was remarkably similar in all of their one to seven-segment unilateral resection group. Only in their pneumonectomy group of 5 cases did they find a significantly greater loss than in lesser resections.

Reduction in vital capacity was fairly constant for the minor resection groups and amounted for the median to 15% of actual and 14% of predicted values. In the major group of patients—those who had lobectomies on one side—the comparable figures were 21%. For the entire group, the median reduction was 18%.

Maximal breathing capacity changes correlated to the extent of resection better than did vital capacity, the reduction being in the vicinity of 17% of actual and 13% of predicted values in the major resection group. This contrasts with the results in the minor resection groups which indicated no reduction. The median reduction for the entire group was 5%.

The probable major cause for reduction of vital capacity is considered to be a thoracotomy effect which is of a restrictive nature. In the more extensive resections, pulmonary factors undoubtedly influence the results. On the contrary, maximal breathing capacity is apparently unaffected by the thoracotomy factor when tests are performed several weeks after resection.

The maximal breathing capacity test—although valuable—is not infallible because of the potential sources of error connected with its performance. A correlation between other factors, including age, preexisting

conditions, and type of disease, with the group results could not be demonstrated. (Young R. C., et al., Pulmonary Function Changes in Bilateral Resection for Pulmonary Tuberculosis: Am. Rev. Tuberc., 79: 468-472, April 1959)

* * * * *

Laryngeal Trauma and Its Complications

Laryngeal trauma with the complications of acute respiratory obstruction may occur as an isolated injury or part of a multiple injury accident. Obstructing hematomas, dislocation, and fractures of laryngeal cartilage result from direct trauma of the neck in boxing, striking a protruding pipe or tree branch (or being struck by either), a blow from a baseball bat or golf ball, or falling while carrying a heavy object and striking its edge. Garroting or the entanglement of a scarf or necktie in machinery likewise produce collapse of the laryngeal cartilages. These cartilages maintain the patency of the airway and their destruction results in acute respiratory obstruction. Less severe injuries result in hoarseness, dysphonia, or aphonia.

Automobile accidents are responsible for most of the multiple injury accidents in which the larynx is involved. The injury almost invariably occurs to the passenger in the front seat whose extended neck strikes the dashboard as the head is thrown forward through the windshield. The accident may occur to a passenger in the rear seat who is thrown forward against the back of the front seat, or to a street-car passenger whose neck strikes the pipe-like handle on the seat in front of him if the car stops suddenly or is involved in a head-on accident. A similar injury may occur to the pilot or copilot of a small plane in a rough or crash landing. For the passenger in the front seat of an automobile, some measure of protection is afforded by a safety belt and a heavy foam rubber pad over the dashboard; but while these suggestions are recommended by those attempting to reduce the morbidity and mortality from automobile accidents, few heed this advice.

In this report, only cases of external trauma are reviewed. Cases of internal trauma, such as caustic burns of the larynx associated with the ingestion of lye, surgical trauma, intubation injuries, feeding-tube accidents, paralysis of the larynx following thyroidectomy, and trauma due to vocal abuse are not included.

An abnormal or absent voice following a history of trauma is fairly indicative of some degree of soft tissue or cartilaginous involvement of the larynx. A cerebral injury incurred in an accident could cause a voice change without direct laryngeal involvement; therefore, this possibility also must be considered. Voice changes may be immediate and may range from variations

in pitch and volume to total aphonia. Respiratory symptoms are progressive stridor, prolonged noisy inspiration and expiration, dyspnea, supra- and infra-sternal retractions and mental changes associated with acute or progressive chronic anoxemia.

Palpation of the neck in suspected laryngeal trauma may disclose deformity, discoloration, abnormal movement or fixation of the thyroid or cricoid cartilages or the supporting thyrohyoid membrane. Commonly, in traumatic fractures of the larynx, the thyroid cartilage is flattened or one ala is found to overlap the other anteriorly. In recent injuries, crepitation and abnormal fixation and induration suggest deformity sufficient to cause stenosis.

X-Ray studies of the larynx—even in the infant—are of inestimable value when laryngeal trauma is suspected, not alone for diagnosis but for record and subsequent progress studies. Lateral x-ray studies of the neck for soft tissues often suffice, but in questionable cases or for more detailed study the anteroposterior intraesophageal film studies as well as planographic studies are indicated. The injection of opaque media such as lipiodol is occasionally helpful. Mirror and direct laryngoscopic photography provides a chronological record of treatment as well as a means of making "before and after" comparisons.

Final evaluation of the general configuration, the location, degree, and extent of a laryngeal injury must be made by direct laryngoscopic and tracheoscopic examinations.

The therapy of laryngeal trauma must be guided by the extent of injury. If soft tissues alone are involved by an obstructing hematoma, voice rest (silence) and steam inhalations are essential. Low tracheostomy should be performed before it becomes a desperate emergency if obstruction is present on the initial examination of the patient or if dyspnea is becoming progressively more severe. Dysphagia will undoubtedly be a complication in this type of trauma, but the use of a feeding tube is to be avoided because of the ulceration that it may cause in the mucosa of the laryngopharynx.

Severe compressing injuries, such as acute injuries to the larynx resulting from automobile accidents, require as active a therapeutic regimen as would be employed in a crushing injury of the nose. Broken cartilages must be replaced, the airway reestablished, and a splint must be introduced to maintain the position of the replaced cartilages until healing is effected. Emergency tracheotomy is life-saving when the accident has occurred and the compressed laryngeal structures occlude the airway. It is extremely important that the tracheotomy be placed low, as far from the fractured larynx as possible, to avoid loss of the cricoid through further trauma and infection.

The active measures that should be undertaken early should restore and maintain the fractured cartilages as close to their original position as possible, and as soon after the accident as is permitted by the general condition of the patient. Peroral manipulation with forceps or the tip of

a laryngoscope may suffice in some cases to reestablish the airway. In other cases, immediate open reduction may be required to obtain satisfactory re-alignment of cartilages. Following either procedure, a polyethylene or similar tube may be inserted into the glottis to serve as a splint to support the soft tissues until healing takes place.

It is unfortunate that often in a multiple injury accident in which the laryngeal fracture seems but a minor or unimportant complication, after the airway has been satisfactorily established by the tracheotomy, the larynx is left untreated. Often, the associated jaw and sternal fractures, internal injuries, and fractures of the extremities take precedence in therapeutic importance. The larynx is understandably difficult to reach under these circumstances.

Nevertheless, it is essential that fracture-reducing procedures be instituted within the first few days following the accident before the cartilages have become fixed in their compressed obstructing position, and before scar tissue forms in the accompanying hematoma to further contract, or even completely obliterate, the airway. These procedures are too often delayed in the hope that as swelling subsides the airway will return to an adequate size. This does not occur unless the trauma has been minimal and is unaccompanied by fracture dislocation of the cartilaginous framework of the larynx.

Severe laryngeal trauma that is not treated by early replacement and fixation of fractured or dislocated cartilages progresses to chronic laryngeal stenosis with a distressing degree of disability. Physical impairment ranges from respiratory effort, stridor, and even chronic anoxemia, to actual acute obstruction which may have to be relieved mechanically by tracheotomy.

Mentally, the disability is aggravated by the annoyance of the tracheotomy tube and the psychic stress of an abnormal, peculiar voice which is a constant source of embarrassment. This continues far beyond the first contact with others. Children so afflicted are subject to teasing and insults from their playmates, and adults have difficulty not only socially, but in finding or keeping steady employment.

Failure or inadequate early management results in chronic laryngeal stenosis and the need of a permanent tracheostomy. Treatment of this complication requires reconstruction of the laryngeal lumen through the removal of scar and deformed cartilage and the lining of the interior of the larynx with a split thickness skin graft. This long and tedious process can be avoided by early reduction and fixation of the laryngeal fractures. (Holinger, P.H., Johnston, K.C., *Laryngeal Trauma and Its Complications*: Am. J. Surg., 97: 513-517, April 1959)

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Chelating Agents in the Therapy of Beryllium Poisoning

Pneumoconiosis associated with heavy-metal inhalation has long resisted most forms of therapy. The development of chelating agents offers a new approach to this problem. This report concerns efforts to study the effect of ethylenediamine tetra-acetic acid (EDTA) on the urinary excretion of beryllium in two patients with beryllium pneumoconiosis. After beryllium pneumoconiosis had been proved in these cases by lung biopsy, a trial of chelation therapy was suggested as a useful adjuvant in the treatment of this disease.

EDTA, a polyamino carboxylic acid, forms water-soluble, relatively unionizing chelates with polyvalent cations and has been shown to cause marked increases in the excretion of the heavy metals without the usual toxicity associated with reaction of the metal ion with body tissues. EDTA has found special usefulness recently in the treatment of lead intoxication and cadmium poisoning.

The amount of beryllium that can cause histologically observable tissue damage is less than 0.01 microgm. per gram of tissue. Currently, there are two suggested theories of the mechanism of granuloma formation leading to the pulmonary disability and eventual cor pulmonale seen in this disease. Sterner and Eisenbud cite the theory that the metal ion combines with tissue protein to form an antigenic substance that is then fixed to tissue. The gradual release of antigen from the body stores then elicits the granulomatous reaction. Schubert and White suggest that the granuloma results from the oligodynamic action of traces of solubilized beryllium that diffuse from the periphery of the metal particle. The limited success of steroid therapy lends support to the former theory because the action of a steroid in minimizing antigen-antibody reactions as well as its effect on fibrous tissue is well known. The demonstration of a specific skin sensitivity to beryllium patch tests also favors the view that an acquired allergy may be involved.

In the present study, removal of the toxic metal was attempted by the use of a chelating agent that might be expected to form a soluble and diffusible complex. Histochemical studies have shown that complex-forming reactions take place even when beryllium is bound to tissue protein for long periods. The use of ACTH or the steroids to help break down the granulomatous reaction surrounding the metal particle, thereby exposing the metal to the action of the therapeutic agent, has been suggested. It is believed that if a significant lowering of the body stores of beryllium can be effected, the clinical course of the disease may be favorably influenced.

Chelation is the name given to the reaction between a polyvalent metal ion and a suitable compound (ligand) to form single or multiple internal-ring structures incorporating the metal ion. There is a definite order of strength

of chelation, somewhat analogous to the electromotive series of the various metals, dependent in part on the formation constants ($\log K$) with the ligand involved. A metal of higher $\log K$ can be expected to displace one with a lower $\log K$ from its chelate.

The agent selected for this study was the trisodium salt of ethylene-diamine tetra-acetic acid. When EDTA is introduced into the body as a free acid or as the trisodium salt, it will bind the calcium ion, owing to the high $\log K$ of calcium and ready availability of this circulating metal in ionized form. In fact, if the administration is rapid and the concentration of the agent is high enough, serum calcium concentration falls and hypocalcemic tetany may result. For this reason, the drug is usually administered as the calcium salt. Several comprehensive discussions of the properties, uses, toxicity, and pharmacologic action of chelating agents in general and EDTA in particular have recently appeared in the literature.

Side effects were minimal in this study. The single occurrence of hypocalcemic tetany was directly related to excessive speed of administration. Patients occasionally complained of mild discomfort along the course of the vein used for infusion. This could be avoided or abated by slowing the drip. No such problems were encountered when calcium EDTA was used. Examinations of daily samples of urine failed to give any signs of renal damage, and blood chemical studies were negative except for one serum calcium determination during the hypocalcemic incident which showed a calcium level of 6.2 mg. per 100 ml. The administration of calcium gluconate during the episode of hypocalcemia apparently did not affect beryllium excretion. The slight diuresis noted during therapy may be ascribed to coincidental chelation of zinc in the kidney regulatory mechanisms with subsequent inhibition of carbonic anhydrase.

The results indicate that trisodium EDTA or calcium EDTA will enhance the urinary excretion of beryllium. The calcium salt appears to be the drug of choice. Whether this metal is being removed from the lung or from some other tissue store has not been determined. Also to be investigated is the possibility that the sequestration of other trace metals will affect the beryllium excretion.

Emphysema and diffuse fibrosis are presumably much more important than the granulomas from the standpoint of symptomatology, but it is suggested that long-term, intermittent therapy with a chelating agent such as EDTA may so deplete the body stores of beryllium ion that the clinical course or progress of the disease may be favorably affected. Some idea of the amount of calcium EDTA that may be required to remove significant amounts of beryllium from the body to achieve this goal may be gathered from Dutra's observation that the beryllium content in cases of chronic beryllium pneumoconiosis ranged from 0.93 to 78.0 microgm. per 100 gm. of lung tissue. Still to be investigated are the side effects of EDTA therapy on the body stores of trace metals, many of which are of extreme importance in enzymatic and metabolic reactions. (Cash, R., et al., *Chelating Agents in the Therapy of Beryllium Poisoning*: *New England J. Med.*, 260: 683-686, April 2, 1959)

From the Note Book

1. RADM Lamont Pugh MC USN (Ret), a former Surgeon General of the Navy, has written his autobiography in a new book entitled, "Navy Surgeon," and released about April 29, 1959 by J. B. Lippincott Co., of Philadelphia. Rear Admiral Pugh served as Surgeon General of the Navy from February 1951 to February 1955. He retired from active service on August 1, 1956. "Navy Surgeon," an unmistakably American story, is more than an autobiography—it is a record of recent history told by a man who has lived it.

(TIO, BuMed)

2. Five articles on aviation medicine subjects are featured in Naval Aviation News, May 1959. The articles are: Johnsville High G Study; Navy Flight Surgeons' Exhibit; Project Mercury Astronauts; Meet a Mach Medic; and Ranger Men Try Their New Suits. (AvMedDiv, BuMed)

3. U.S. Naval Medical Research Unit No. 3 in Cairo was represented at the Ninth Middle East Medical Assembly at the American University at Beirut, Lebanon by four members of the Unit presenting scientific articles. LT T.G. Akers, MSC USN presented a paper entitled, "Poliomyelitis in Cairo, Egypt, U. A. R., during 1958 - age, season, and poliovirus distribution of 447 confirmed cases of paralytic poliomyelitis." LT N. L. Freeman MSC USN presented a paper entitled "Hemagglutination Studies with Schistosoma Hematobium Antigens."

A scientific exhibit entitled, "The Treatment of Shigellosis with Furoxone," was monitored by LTCDR M.E. Musgrave MC USN. CDR R.E. Fultz MC USN attended the Assembly as official delegate of NAMRU-3. LCDR K.C. Hoerman DC USN presented a scientific paper before the meeting of the International Association of Dental Research, British Division, Manchester, England, entitled, "Research Studies Concerned with Protein Components in Parotid Glandular Secretion." (NAMRU-3)

4. U.S. Navy and Public Health Service scientists have reported that a commercially prepared vaccine has proved 83% effective in preventing Asian influenza among a group of Naval recruits. Results of the carefully planned study at the Great Lakes Naval Training Station also revealed that a multi-strain vaccine used earlier by the military—one not containing the Asian strain—also provided a modified degree of protection against the Asian type of influenza. (PHS, HEW)

5. Injuries to the hand from homemade rockets are becoming more frequent. The first procedure is extremely important. The surgeon is aided in the treatment of these particular injuries by the young age of the patient, with his excellent recuperative powers and remarkable capacity for compensating

and adapting to disability. (Am. J. Surg., April 1959; F.A. Arcari, M.D., R.D. Larsen, M.D., J.L. Posch, M.D.)

6. This report presents and compares the findings, clinical course, and management in 11 fatal cases and 9 nonfatal cases of post-Asian influenzal staphylococcal pneumonia occurring in Boston and environs. The report analyzes the properties of the strains of staphylococci responsible, and demonstrates the importance of the rapid choice of effective antistaphylococcal chemotherapeutic agents. (A.M.A. Arch. Int. Med., April 1959; C.M. Martin, M.D., et al.) Note article, "Asian Influenza A - Boston 1957 - 1958", page 9.

7. Seven years' experience with various types of resections for pulmonary tuberculosis is reviewed. By judicious use of procedures described, a maximum amount of functional tissue can be preserved. The simplest bronchial closure yields excellent results. There is no evidence that preresection thoracoplasty is of value. (J. Thoracic Surg., April 1959; D.V. Pecora, M.D.)

8. The results of the lung function tests on 417 patients with pulmonary tuberculosis presented for possible thoracic surgery, are reviewed. A brief practical routine for presurgical evaluation is described. (Am. Rev. Tuberc., April 1959; J.W. Morton, I Khan)

9. Cancer of the large intestine (including the rectum) is the most common malignancy that occurs in men and the 3rd most common in women. It accounts for 33,000 annual cancer deaths in the U.S. Men are affected almost twice as frequently as women and the average age of occurrence is between 50 and 70. (G P, April 1959; E.M. Miller, M.D.)

10. This article discusses the higher fetal mortality with repeat abdominal delivery, its relation to prematurity, and measures that may be used to improve the situation. (Am. J. Obst. & Gynec., April 1959; A.W. Diddle, M.D., V. Gibbs, M.D., S. Lambeth, M.D.)

11. This study reports the pattern of solute and water excretion in mercurial diuresis in patients with congestive heart failure and relates the findings to those obtained in normal human subjects. (Circulation, April 1959; N. Spritz, M.D., et al.)

12. Smallpox vaccination is important for everyone in this country. Vaccination is especially urgent for all persons planning foreign travel, for those who provide services in international travel and commerce, and for personnel in hospitals and health services. (PHS, HEW)

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American Board of Obstetrics and Gynecology

"Office of the Secretary:

Robert L. Faulkner, M.D.
2105 Adelbert Road
Cleveland 6, Ohio

Applications for certification (American Board of Obstetrics and Gynecology), new and reopened, Part I, and requests for re-examination Part II are now being accepted. All candidates are urged to make such application at the earliest possible date. Deadline date for receipt of applications is August 1, 1959. No applications can be accepted after that date.

Candidates are requested to write to the office of the Secretary for a current Bulletin if they have not done so in order that they might be well informed as to the present requirements. Application fee (\$35.00), photographs, and lists of hospital admissions must accompany all applications."

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Shipboard Pest Control -
A New Training Film

The Bureau of Medicine and Surgery announces the release of a new training film entitled "Shipboard Pest Control" (MN-8722) which will be of interest alike to medical and line personnel who are in any way concerned with this critical aspect of preventive medicine. The film presents the three essential points of an effective pest-control program: prevention of entry, destruction of such pests as are already aboard, and good housekeeping to prevent breeding of pests in shipboard spaces.

The picture summarizes methods of pest destruction and reviews in general the important considerations in fumigating, trapping, poisoning, and dusting. It then presents in detail the principles and techniques of space spraying and residual spraying as applied against appropriate pests in specific locations. Throughout the film, precautions are emphasized for the safety of personnel engaged in the work of extermination.

Although this film was planned for use aboard ship and by the Navy's Preventive Medicine Units in their work with the Fleet, its subject matter will have equally useful application at shore stations. Personnel concerned with environmental sanitation in hospitals, barracks, messing facilities and the like may be interested in adopting it for use in their training programs.

Prints are being distributed to District Training Aids Sections and Libraries, and selected key stations. If prints are not available from your usual source, address inquiry to the Film Distribution Unit, Training Division, Bureau of Naval Personnel, Department of the Navy, Washington 25, D. C.

(AudioVisual Br., BuMed)

DENTAL**SECTION**Dental Cutting Procedures

Investigation of the fundamental physical operating characteristics of rotary dental cutting devices is being conducted in the Dental Research Section of the National Bureau of Standards. The formation of any new surface area (as in the chip formation associated with cavity or crown preparation) requires a certain amount of energy. All dental handpieces and all rotary cutting instruments represent merely a means of transferring this energy from a source of power (dental engine, air compressor, hydraulic pump, et cetera) to the surface of the tooth. However, in the process of energy transfer certain losses occur. Some of these losses (belt drag, wind resistance, bearing friction, gas or fluid viscosity) serve only to raise the total energy consumed and as long as they are held to any reasonable value may be disregarded. Other losses, however, which result in the dissipation of portions of the energy as heat are of prime biological importance.

In this study the total energy transferred to the cutting instrument by the handpiece, the portion of this energy going into useful cutting, and the portion going into heat production are being measured and their relationships are being studied as a function of instrument speed, instrument design, instrument wear, et cetera.

The total energy transferred to the cutting instrument by the handpiece is determined by the simultaneous measurement of speed and torque. This is accomplished in either of two testing machines which have been designed and constructed specifically for this purpose. One apparatus which is used for low speed, high torque handpieces (most belt driven types) employs an eddy current brake for torque measurement and a photo-electric system for speed determination. The second apparatus used for high speed, low torque handpieces (most turbine types) makes use of a synchronous electromagnetic field principle for torque measurement and an electronic system for simultaneous speed determination.

The amount of energy going into useful work is expressed in terms of the amount of material removed during unit time intervals. The amount of energy going into heat production is measured in a specially designed micro-calorimeter. At present, only specimens of a standard "half-hard" brass (which closely simulates dentin with respect to cutting characteristics) have been employed; however, the use of other materials is contemplated.

Preliminary results indicate that when cylindrical carbide burs are used the ratio of the amount of energy going into cutting to the amount going into heat production becomes significantly greater when a rotary speed of about 100,000 rpm is reached. The ratio continues to improve through the highest rotary speeds tested (350,000 rpm); however, the amount of improvement is not great above the 100,000 rpm range. (Perkins, R. R., Taylor, D. F., Kumpula, J. W., Evaluation of Dental Cutting Procedure: National Bureau of Standards Progress Report #6326, December 31, 1958)

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Dentist-Population Ratios

According to Dr. J. Stork of the Netherlands, officer of the Federation Dentaire International, the ratio of dentists to population varies greatly throughout the world. A favorable ratio of 1 per 1600 exists in West Germany while the astonishing ratio of 1 per 1,750,000 exists in Arabia (Yemen). In the United States, there is a ratio of one active dentist for each 1900 population.

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American Academy of Oral Pathology Elects New Officers

Two Navy Dental Corps officers have been elected for office in the American Academy of Oral Pathology for the year 1959-1960. Captain Robert A. Colby DC USN, on duty at the U. S. Naval Dental Clinic, Yokosuka, Japan, was elected President Elect; Commander Henry H. Scofield, Jr., DC USN, on the staff of the U. S. Naval Dental School, National Naval Medical Center, Bethesda, Md., was elected Vice President.

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Board Certifications

Five DC officers recently received American Board certifications. Captain Paul W. Suitor DC USN, Administrative Command, NTC, San Diego, Calif; and Captain Frederick T. Wigand DC USN, U. S. N. H., Jacksonville, Fla., were certified Diplomates of the American Board of Oral Surgery.

Certified as Diplomates of the American Board of Periodontology were: Captain Alfred L. Raphael DC USN, Naval Dispensary, Washington, D. C.; LtCdr Perry C. Alexander DC USN, staff of Naval Dental School, NNMC, Bethesda, Md.; and LtCdr Oscar W. Donnenfeld DC USN, U. S. Naval Station Newport, R. I.

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RESERVE SECTION

Two Weeks' Course in Military Entomology

The Armed Forces Pest Control Board will conduct a 14-day training course in Military Entomology under the auspices of the Naval Medical School, National Naval Medical Center, Bethesda, Md., 3 - 16 August 1959. This annual course, given for the first time in July 1958, has the following main objectives:

1. To provide advanced training in military entomology for active duty and Reserve entomologists of the military services.
2. To make known to nonmilitary individuals and organizations the contributions which the military services have made and are making to the science of entomology and the control of arthropod pests and vectors.
3. To indicate the nature of the entomological problems which confront the Armed Forces and to stimulate scientific research in basic and applied problems which required attention.
4. To develop a continuing sympathetic and cooperative attitude toward military entomology on the part of universities and other civilian organizations.

Eligible inactive Reserve Medical Service Corps officers whose specialty is entomology of both pay and nonpay programs of the Naval Reserve may request this training. Quotas will be allocated to the Third, Fourth, Fifth, Sixth, and Ninth Naval Districts. The course will be limited to 30 attendees. Therefore, applications should be forwarded as soon as possible to the Commandant of the appropriate Naval District. Messing and limited B.O.Q. facilities at the National Naval Medical Center are available. Minimum uniforms for a 2-week period are necessary. Security clearance is not required.

Applicants anticipating attendance should notify, prior to 30 June 1959, the Preventive Medicine Division, Bureau of Medicine and Surgery, Potomac Annex, U. S. Department of the Navy, Washington 25, D. C.

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Naval Reserve Medal

The Secretary of the Navy on 12 September 1938 established the Naval Reserve Medal to be issued by the Chief of Naval Personnel to officers and

enlisted personnel of the Naval Reserve who have completed 10 full years of satisfactory Federal service as defined by Public Law 810, 80th Congress, as amended.

Service in the Marine Corps Reserve may be counted towards establishing eligibility for the Naval Reserve Medal if the applicant has been appointed or enlisted in the Naval Reserve within 3 months of separation from the Marine Corps Reserve, and provided that such Reservist has not been awarded a Marine Corps Reserve Medal based on any portion of the time included in his application for the Naval Reserve Medal.

For each additional 10 years of qualifying service, the Chief of Naval Personnel will on request authorize the wearing of a bronze star on the ribbon.

All honorable service, active or inactive, as a member of the Naval Reserve prior to 1 July 1950 may be counted for qualifying purposes.

After 30 June 1950, in order to achieve a year of satisfactory Federal service for the Naval Reserve Medal, as defined in Public Law 810, 80th Congress, as amended, a Naval Reservist must accumulate during each anniversary year a total of 50 retirement points. An anniversary year commences on 1 July and ends the following 30 June.

Credit may be accrued toward the Naval Reserve Medal on either active or inactive duty, and the required 10 years need not be continuous. Service in a regular component of the Armed Forces shall not be creditable. Service on either the Honorary Retired List of the Naval and Marine Corps Reserve or the Inactive-Status List shall not be deemed to be Federal service for this purpose.

The Naval Reserve Medal will not be awarded for any service after 12 September 1958. (The Armed Forces Reserve Medal will be awarded to any officer or enlisted member or former member of the Reserve component who completes or has completed a total of 10 years of honorable satisfactory service after 12 September 1958.)

Applications should be submitted in letter form to the Chief of Naval Personnel via commanding officers or Naval District Commandants as appropriate.

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Change of Address

Please forward requests for change of address for the News Letter to: Commanding Officer, U. S. Naval Medical School, National Naval Medical Center, Bethesda 14, Md., giving full name, rank, corps, and old and new addresses.

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PREVENTIVE MEDICINE SECTION

Preventive Medicine in Infectious and Noninfectious Diseases

Over the centuries, epidemic diseases have tended to wax and wane, to change their form and sometimes their character as one type of infection disappeared and another achieved prominence, to become resurgent without apparent reason and equally mysteriously to decline. This periodicity which has been the classic attribute of the acute infections remains a mystery, but nevertheless, thought, study, and reason have enabled empiric remedies to be applied on a community basis. Whether the method was specific and concerned the handle of the Broad Street pump or resulted from the philosophy of Jeremy Bentham of "the greatest happiness of the greatest number," each of these men of history working in the darkness of scant scientific knowledge was able to make a contribution to the prevention of disease and the alleviation of suffering.

In the realm of infectious disease or of noninfectious illness, the natural history of the condition can be studied from the original forces which led to its occurrence and the alterations brought about by the disease process to its eventual termination either through return to the normal or by partial or total destruction. Every case of an individual disease does not conform to the classic conception which describes the main features in symptomatology; epidemics vary in their pattern. Throughout the process, the natural history may undergo change in the individual by the entry of some new factor so that variation from the typical may occur; similarly, in the community, alteration may take place in the pattern of epidemic or mass disease by the interposition of an accidental or deliberate change in conditions applicable to the normal development of the natural process.

Through a careful study of the processes of disease, it may be possible to formulate plans based on knowledge of the natural history and of the appropriate points in the innate process of the disease at which control measures may be applied. This is particularly true of infectious diseases and has been demonstrated by alterations in the pattern of epidemic disease through the effect of changes in environmental and sociological factors and by the application of specific biological measures of control. Thus, some of the great epidemic infections of the past have been submitted to control and eventual eradication by improvements in sanitation and living conditions, while specific prophylactic measures have wrought changes in the pattern of diseases like smallpox and, in more recent times, diphtheria, and are already causing alterations in the pattern and age incidence of poliomyelitis.

In the western world where acute infections no longer loom as a major epidemiological problem, the time is more than ripe for intensive study of disease processes in other fields than those of the infective illnesses. The scope of the epidemiological method must now be widened to include mass disease or trauma, and there is no reason to suppose that a combination of intensive epidemiological study combined with application of public health methods is incapable of making a great impact on many conditions which have now emerged as urgent public health problems causing major morbidity and mortality.

The group of diseases included under the generic title of cancer is gradually proving itself amenable to successful epidemiological study and statistical analysis as to cause and effect. In the industrial field, the eradication of certain types of cancer has already been achieved and—by the statistical method—researchers have pointed the way towards possible control measures in cancer of the lung and bronchus. Deaths from leukemia continue to show an increase and most authorities believe the increase is not wholly explicable on the grounds of better understanding of the disease or to improved facilities for making the diagnosis, but is due to a real increase in incidence. The connection between ionizing radiations and leukemia has undergone study on a nation-wide basis; results have been published of a study on the histories of children certified to have died of malignant disease. In respect to children dying from leukemia and other forms of malignant disease, nearly twice as many of the mothers said they had been subjected to x-ray examinations of the abdomen during pregnancy as did the mothers of the control children. A similar excess was not found when studies were made of the mothers before conception or of the children after birth. If the implications of this investigation are confirmed, an effect may be expected on clinical practice and on the incidence of leukemia and other forms of malignant disease in children. These examples are sufficient to illustrate the importance of epidemiological, statistical, and sociological study of this group of diseases which ranks next to diseases of the heart and circulatory system as the greatest cause of mortality.

The increase in coronary disease in recent years has resulted in intensive study by the research worker in collaboration with the clinician into the underlying causes of the changes leading to coronary atherosclerosis. In laboratories and hospitals, extensive research into the basic underlying causes of this condition and its treatment is being undertaken by individuals or groups of workers. The volume and nature of this research in the laboratory and hospital are not matched, however, by epidemiological or sociological investigation. Because factors related to diet, nutrition, exercise, social class, occupation, and stress—as well as genetic factors—may have important implications in the etiology of this condition, it would seem to be susceptible to useful investigation on epidemiological lines. The Social Medicine Research Unit of the Medical Research Council has undertaken studies of coronary

atherosclerosis and ischemic heart disease in relation to social class and nature of work. A group from the Social Medicine Department, University of Birmingham, Warwick, England, have carried out a survey of patients suffering from coronary-artery disease with special reference to raised blood pressure, smoking habits, and mental stress in employment. Some medical officers of health are carrying out investigations into environmental and social conditions in coronary disease in collaboration with hospital clinicians and family doctors, but there is scope for extension of such work by coordinated effort on the part of the epidemiologist, the health worker, and the clinician.

Other mass diseases which are causes of high morbidity or mortality—bronchitis, a major cause of invalidism and death; chronic rheumatism, a prime cause of loss of working capacity; mental illness, an outstanding community health problem; and many other disorders of high incidence—are worthy of intensive epidemiological study and evaluation of the ecological influences in their origin and progress.

In the measurement of the effect of disease upon the community, it is necessary to have reasonably accurate information which normally comes from mortality statistics, although these may not provide a true picture of morbidity or the actual amount of current sickness prevalent in a community. Therefore, to pave the way for fruitful epidemiological investigation and subsequent administrative action for prevention, control, or alleviation, reliable data are essential not only of death rates but of morbidity. This is particularly the case if epidemiological investigation is to be applied to high incidence or mass diseases of a noninfective character. Much more attention has recently been paid to the collection of such information, a fruitful source of which is the family doctor. The establishment of registration schemes for the collection of information about cancer will in time afford valuable clinical information as to diagnosis, therapy, and prognosis, and will also provide data on which to base the education of the public and the medical profession on its sociological, psychological, and epidemiological aspects.

Use of the experimental method in research is accompanied by frequent failure to achieve the objective, by partial success in obtaining new knowledge, and by continuing experiment in the same or allied fields. The pursuit of knowledge through epidemiological methods equally must have its failures and no sound investigation is worthless because of lack of success in new discovery. The real failure will lie in neglect to seize the opportunities which are presenting themselves to every health authority, health worker, and to every epidemiologist. The compilation of information, study of mass disease, and the application of sound administrative methods can produce effects as profound as those which eradicated the epidemic diseases. Failure is the graveyard of lost opportunities. (Sir Kenneth Cowan, Presidential Address to Preventive Medicine Section, Health Congress, Eastbourne, Sussex, England, Roy. Soc. Promot. Health J., 78: 530-532, September - October 1958)

Salmonella Infections in Children's Wards

Cases of Salmonella infection arise from time to time without cause or connection with other incidents. The author finds that the periodic examination of feces from children in a ward is of value not only to obtain an early diagnosis, but also to prevent cross-infection. In the outbreak described, only 3 cases were clinically apparent, but the infection was kept going for 2-1/2 months by 10 symptomless excretors among patients and staff. The symptomless excretors were detected only because the feces of every child in the ward were examined on admission and once every week thereafter.

Two children were still excreting Salmonella 10 months after they were first infected. (Jellard, C.H., et al, An Outbreak of *S. Bovis-Morbificans* Infection in a Children's Ward: *Lancet*, 1: 390-392, 21 February 1959)

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Selected Materials on Staphylococcal Disease

The staphylococcus has been recognized for many years as an important organism associated most often with suppurative processes of man and animal. Staphylococci are found in man and in the immediate environment of man so frequently that staphylococcal infections must be considered as endemic in the general population.

There is suspicion today that the antibiotic-resistant "hospital strains" of staphylococci are significantly more virulent than "community strains." For this reason, hospital-acquired staphylococcal disease is being widely recognized as a health problem of increasing import. Because many hospitals already have experienced a serious problem with staphylococcal infections, it is understandable that patients upon discharge from the hospital may serve as potential spreaders of resistant strains to the community at large. Hospital and public health authorities are justly concerned with both the real and potential impact of this disease on the general population.

A basic approach to the solution of the problem embraces adequate training of all personnel—physicians, nurses, laboratory and environmental health workers—who will be called upon to deal effectively with it. "Selected Materials on Staphylococcal Disease, Public Health Service Publication No. 627, " October 1958, compiled by the Communicable Disease Center, U. S. Public Health Service (available from Superintendent of Documents, U. S. Government Printing Office, \$1.25 per copy), is designed to provide useful information to instructors and others selected to play a role in teaching programs at many levels of operations. This publication contains the following selected reprints.

American Academy of Pediatrics:

February 1958: SPECIAL REPORT ON "STAPHYLOCOCCAL INFECTIONS IN THE NEWBORN" - COMMITTEE ON FETUS AND NEWBORN - AAP

March 1958: SUGGESTIONS FOR CONTROL OF STAPHYLOCOCCAL INFECTION IN NEWBORN NURSERIES

American Hospital Association:

(Reproduced from Vol. 48, pp. 1071-1074, American Journal of Public Health)

May 21, 1958 (Bulletin 1): PREVENTION AND CONTROL OF STAPHYLOCOCCUS INFECTIONS IN HOSPITALS

American Journal of Public Health:

Vol. 47, pp. 990-994, T. E. Shaffer, R. F. Sylvester, J. N. Baldwin, M. S. Rheins: STAPHYLOCOCCAL INFECTIONS IN NEWBORN INFANTS. II. REPORT OF 19 EPIDEMICS CAUSED BY AN IDENTICAL STRAIN OF STAPHYLOCOCCUS PYOGENES

Vol. 48, pp. 277-318, R. T. Ravenholt, O. H. Ravenholt, F. H. Wentworth, A. L. Miller, B. B. Wentworth, F. R. Fekety, L. Buchbinder, E. L. Shaffer, S. Goldberg, H. P. Price, L. A. Pyle, W. A. Murray, G. E. McDaniel, M. Reed: STAPHYLOCOCCAL SYMPOSIUM

STAPHYLOCOCCAL INFECTIONS IN THE HOSPITAL AND COMMUNITY
R. T. Ravenholt and O. H. Ravenholt

OBSERVATIONS RELATIVE TO THE NATURE AND CONTROL OF EPIDEMIC STAPHYLOCOCCAL DISEASE

F. H. Wentworth, A. L. Miller, and B. B. Wentworth

CONTROL OF AN OUTBREAK OF STAPHYLOCOCCAL INFECTIONS AMONG MOTHERS AND INFANTS IN A SUBURBAN HOSPITAL

F. R. Fekety, L. Buchbinder, E. L. Shaffer, S. Goldberg, H. P. Price, and L. A. Pyle

EVALUATION OF THE PHONE SURVEY IN AN OUTBREAK OF STAPHYLOCOCCAL INFECTIONS IN A HOSPITAL NURSERY FOR THE NEWBORN

W. A. Murray, G. E. McDaniel, and M. Reed

Vol. 48, pp. 1071-1074, The American Hospital Association: PREVENTION AND CONTROL OF STAPHYLOCOCCAL INFECTIONS IN HOSPITALS

Annals of Internal Medicine:

Vol. 43, pp. 287-298, L. Weinstein: THE CHEMOPROPHYLAXIS OF INFECTION

Vol. 45, pp. 738-781, D. E. Rogers: THE CURRENT PROBLEM OF STAPHYLOCOCCAL INFECTIONS

British Medical Journal:

Vol. 1, pp. 69-73, R. Hare, M. Ridley: FURTHER STUDIES ON THE TRANSMISSION OF STAPH. AUREUS

Canadian Medical Association Journal:

Vol. 75, pp. 371-380, H. Starkey: CONTROL OF STAPHYLOCOCCAL INFECTIONS IN HOSPITALS

Journal of the American Medical Association:

Vol. 164, pp. 1733-1739, D. N. Wysham, W. M. M. Kirby: MICROCOCCI (STAPHYLOCOCCI) INFECTIONS IN A GENERAL HOSPITAL

Journal of Clinical Pathology:

Vol. 9, pp. 115-127, E. S. Anderson, R. E. O. Williams: BACTERIOPHAGE TYPING OF ENTERIC PATHOGENS AND STAPHYLOCOCCI AND ITS USE IN EPIDEMIOLOGY

Journal of Laboratory and Clinical Medicine:

Vol. 45, pp. 935-942, M. H. Lepper, G. G. Jackson, H. F. Dowling: CHARACTERISTICS OF THE MICROCOCCAL NASAL CARRIER STATE AMONG HOSPITAL PERSONNEL

Journal of Pathology and Bacteriology:

Vol. 78, pp. 253-259, S. K. R. Clarke: NASAL CARRIAGE OF STAPHYLOCOCCUS AUREUS

Lancet:

Vol. 2, pp. 786-794, R. Blowers, G. A. Mason, K. R. Wallace, M. Walton: CONTROL OF WOUND INFECTION IN A THORACIC SURGERY UNIT

Vol. 2, pp. 885-891, L. Colebrook: INFECTION ACQUIRED IN HOSPITALS

New England Journal of Medicine:

Vol. 255, pp. 787-794, C. W. Howe: PREVENTION AND CONTROL OF POST-OPERATIVE WOUND INFECTIONS OWING TO STAPHYLOCOCCUS AUREUS

Surgery, Gynecology and Obstetrics:

Vol. 106, pp. 1-10, H. T. Caswell, K. M. Schreck, W. E. Burnett, E. R. Carrington, N. Learner, H. H. Steel, R. R. Tyson, W. C. Wright: BACTERIOLOGIC AND CLINICAL EXPERIENCES AND THE METHODS OF CONTROL OF HOSPITAL INFECTIONS DUE TO ANTIBIOTIC RESISTANT STAPHYLOCOCCI

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New Four in One Antigen

The new four-in-one antigen to immunize preschool children against poliomyelitis, diphtheria, pertussis, and tetanus was licensed under the Public Health Service Act on March 25, 1959. These combined antigens are designed for young children only and it is not advisable to give them to older children and adults because of their greater sensitivity reactions to diphtheria toxoid in full dose.

Two manufacturers were licensed: Merck, Sharp, and Dohme; and Parke Davis and Company. (ComDisBr. PrevMedDiv, BuMed)

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Venereal Disease Epidemiologic Report

The U. S. Public Health Service has recently revised the venereal disease contact report form. The new Venereal Disease Epidemiologic Report, PHS-2936, 6-58, replaces PHS-1421, Rev. 3-53. It is expected, that all activities will use the new form by 1 July 1959. BuMed Inst. 6222.7, Venereal disease contact, interviewing and reporting, will be revised accordingly.

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Basic Facts for Safe Boat Trailing

While spacemen shoot for the moon, American earthlings are beating a super-octane track to the water. By the time they launch jet styled boats, don water skis, aqualungs and goggles, and grab fish spears, they look like something the spacemen might meet on the moon. America's grounded masses are having fun. In fact, 35 million of them are making boating the nation's top family sport. In 1957, there were 3,360,000 outboard boats in use plus 2,375,000 smaller boats which could be used with outboard power. The biggest boon to the outboard skipper who can't afford, doesn't want, or can't have a mooring spot for his craft is the boat trailer. It will get the boat from the back yard to the water if the following basic facts for safe boat trailing are observed:

1. Match the trailer to the boat and the car. Look for the Outboard Boating Club of America (OBC) weight capacity rating and if the boat comes within 100 pounds of it, for added safety, get the next larger trailer. Remember that a motor, luggage, and extra gear will probably be loaded in the boat.
2. Check your trailer with requirements of applicable state motor vehicle laws. The Uniform Vehicle Code lists the following special safeguards: Tail Lamps. One light visible for at least 500 feet.

Other Lighting. Trailers weighing 3000 pounds gross or less, also should have two reflectors, one on each side; if over 3000 pounds, additional clearance and side marker lamps. All trailers should have a stoplight if passenger car stoplight is obscured.

Brakes. Trailers over 3000 pounds should be equipped with brakes which are adequate to control their movement and operated from the towing vehicle. Brakes should work automatically in event of accidental breakaway. New trailers for highway use—except semi-trailers less than 1500 pounds—should have service brakes on all wheels.

Width. Total outside width of any vehicle or load should not exceed 8 feet.

Load. No shifting or dropping allowed; loads must be secure for transport on the highway.

3. For maximum safety, couple the boat trailer to the car with a frame hitch instead of a bumper hitch. The Society of Automotive Engineers (SAE) approves the use of a bumper hitch for trailers under 2000 pounds gross weight, but recommends a frame hitch for trailers over that weight. All couplings should be securely mounted by bolting, welding, or riveting. Don't take a chance on a makeshift arrangement. The SAE also recommends that couplings be equipped with hand locks which won't come apart during travel, and that the hitch be designed so it can be disconnected regardless of angle of trailer to towing vehicle.

4. To coast securely along waves of concrete and asphalt from yard to water, use a hitch safety chain which most states require by law. Get out and check the hitch and bolt tie-downs whenever stops are made. Loosen the tie-downs to reduce strain on the boat if stopover is for a long time. Make sure that the trailer, boat, and motor are insured.

5. To navigate the highway without scuttling the rig, make sure when passing that there are no oncoming cars, then swing wide. Use an outside rear view mirror if the boat blocks vision on the inside mirror. Be alert for landlubber pedestrians and jaywalkers who might see the car, but bang into the side of the trailer. When stopping, allow plenty of space for trailer and boat too. Travel slower than usual and practice braking at different speeds. Give clear signals if blinker lights are hidden by the boat.

6. To launch an outboard, the driver needs a keen sense of direction and, if possible, a guide standing at the rear of the trailer to call out instructions. Back SLOWLY into the launching site at a right angle. To make the rear of the trailer go to the right, steer left; to go left, steer right. If the site is natural or unimproved, pick a sloping spot firm enough to give a lot of tire traction. If it is sandy or muddy, better traction can sometimes be gained by deflating the tires slightly. (Replace air in tires as soon as possible.)

Boats Away. Three steps into the water: (1) Remove the rear tie-down when a few feet from the water's edge. (2) Tilt the motor up and unlock the bow winch, but keep the boat snubbed tight. (3) Back up until the trailer wheels are an inch or two in the water, turn off the ignition, set the hand brake, put the car in gear, and give the boat a firm push down the trailer.

Legislation and Specifications

Laws governing trailer operations are established by the state. The National Safety Council recommends that the Uniform Vehicle Code be used as a guide by states when drafting legislation on operation and equipment of motor vehicles and trailers. The Code may be obtained from the National Committee on Uniform Traffic Laws and Ordinances, Sheraton Building, 711 14th St. N.W., Washington 5, D. C.

The Outboard Boating Club of America composed of leading outboard manufacturers has developed standards for design and manufacture of boat trailers. Trailer builders have agreed to test their products for up to 50% more than their recommended capacity and to document the test with an affidavit to the industry group. For further information, write: Outboard Boating Club of America, 307 No. Michigan Ave., Chicago 1, Ill.

The Society of Automotive Engineers has published recommended practices for passenger car trailer couplings. For information, write to: The Society of Automotive Engineers, Inc., 485 Lexington Ave., New York 17, N. Y. (Traffic Safety, 52: 15-16, August 1958)

NOTE: It is recommended that the foregoing be reproduced in Station newspapers.

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Dishwashing Machine Operation Aboard Ship

(A few pointers are presented herein to assist in the proper operation of dishwashing machines; for obtaining clean, dry, and sanitary mess gear; and for the correct stowage of the mess gear aboard ship.)

Prerinsing enables the dishwashing machine to do a better washing and sanitizing job. Silverware should be soaked, preferably in cold water, prior to being racked and placed in the dishwashing machine. All mess gear should be scraped and then prerinsed in cold water prior to being placed in the dishwashing machine. The Bureau of Ships, as funds permit, is providing garbage grinders fitted with prerinsing facilities in those spaces equipped with dishwashing machines. However, prerinsing operations should

not be delayed until installation of the new equipment; it is recommended that temporary prerinsing facilities be rigged in the compartment containing the dishwashing machine rather than in a passageway.

When mess gear is prerinsed, wash water temperature may range from 150° to 160° F. When mess gear is not prerinsed, wash water temperature should be kept at approximately 140° F. to avoid baking food residues on the surface of the mess gear.

Effective sanitizing of mess gear is accomplished when the temperature of the final rinse water is 170° F. or higher. As a safeguard, dishwashing machines aboard Navy ships are fitted with a thermostatic switch to prevent operation of the machine when the temperature of the final rinse water drops below 180° F. The temperature of the final rinse water also governs the drying time of the mess gear when it is removed from the machine. Consequently, a high temperature final rinse water (200° F.) will cause the mess gear to dry more rapidly and thoroughly than a low temperature final rinse water (180° F.)

Detergent concentration in the wash water is very important and must be maintained at 3% to be fully effective. Guidance in the manual feeding of detergent to the wash water to maintain a 3% concentration is contained in Bureau of Ships Publication NavShips 250-522, Operation and Maintenance of Dishwashing Machines. There are various detergent dispensers and meters on the market for automatically maintaining or indicating the detergent concentration in the wash water of dishwashing machines. However, these units require frequent calibration and repair and their use is not recommended.

It is particularly important that dishwashing machines be kept clean. Disassembly of spray arms, removal of scrap trays and spray curtains, and a thorough cleaning of the machine inside and out after each period of use will keep the machine operating effectively at all times.

Mess gear should be placed in the dishwashing machine racks so that the various items will not retain water, i. e., cups and bowls should be placed in the racks upside down so that the water will run off. The dishwashing machine rack for compartmented mess trays, currently in use, has sufficient slots for holding twelve (12) such trays. However, washing action will be more thorough if only six (6) trays are placed in each such rack by using the odd numbered slots (1, 3, 5, 7, 9 and 11 or 12). As each rack of mess gear is discharged from the dishwashing machine it should be raised slightly off the dresser and then dropped back on the dresser to dislodge the large droplets of water from the mess gear and facilitate drying. The rack of mess gear should then be moved away from the machine and allowed to stand for at least one minute to dry. The use of drying towels is prohibited. After drying, the mess gear should be returned to the mess gear lockers and racks and stowed in an inverted (upside down) position. Silverware is generally stowed flat in stainless steel boxes or containers. When so stowed, the knives, forks, and spoons should each be in separate containers and with the handles toward the

front of the container. Where cylindrical upright stowage containers are provided for silverware, each of the items should likewise be stowed in separate containers and with the handles up. All mess gear, when stowed, should be protected from contamination by dust, splash, coughing, sneezing, and handling.

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Benefits of Golf

Golf, among other beneficial effects, leashes anxiety, raises morale and tones up the bodily functions.

Golf affords fresh air and sunshine, general body exercise of varying degrees, stimulation of the mind by the mere process of watching a little white ball, and the satisfaction of personal gain and achievement by the challenge it presents. However, these items do not constitute the sole benefits. As a man plays on the course, he rests; his tensions find an outlet and decrease; his guards are down, so to speak, and he becomes more congenial with his fellow man whether he is aware of it or not.

A familiar picture to everyone is the individual who upon returning home from a hard day's work, bored, perhaps unhappy, and tired, flops himself on the nearest couch too exhausted to eat. In this state of near stupor he lies when suddenly the phone rings and a fellow player extends an invitation to play a round of golf. He becomes electrified with energy; with a spring in his step, a song in his heart, he showers his loved one with endearing terms and asks "What's there to eat? I'm starved." He is looking at the world with rose-colored glasses. This alone is enough to convince anyone of the beneficial psychologic impact of golf.

An individual who handles his aggressive drives poorly or has no suitable outlet to vent these drives will find release and discharge of these aggressions by participating in a sport involving muscular activity. Golf furnishes this type of muscular and physical activity. Hitting a golf ball viciously may serve as a vicarious release of hatred toward a dominating person, such as an employer with no harm coming to the person, boss, or the job.

The author knows of no other widely played sport where there is a willing intermingling of all strata of socio-economic class, race, color, or creed. In this game that supplies recreative enjoyment, the golfer is interested primarily in whether the members of his foursome are fair players who are acquainted with the etiquette of the game.

The degree of exercise offered by golf plays a role in preventive medicine. Lack of muscular activity may result in weak muscles and inadequate egress for nervous tension. This in turn may be responsible for various forms of neck and shoulder pain, backache, and headaches, as well as other forms of

"psychosomatic" disturbances. The consensus among medical men is that heart attacks (coronary thrombosis), along with other factors, appear to be associated more with lack of physical activity and poor health habits than hard work and over-exercise. As a matter of fact, golf is often prescribed as a means of rehabilitation for those patients who have suffered and recovered from a heart attack. Morris and Heady reported in the British Journal of Industrial Medicine that sedentary habits seem to be related to increased death rate in the middle age group.

A significant relationship was found to exist between physical activity and fitness and academic achievement in a group of male freshmen at the State University of Iowa. This study was conducted by Weber and published in the Resident Quarterly Medical Journal. The findings clearly showed that, in general, good grades accompanied physical fitness.

The importance of exercise as a factor in weight control is borne out by a study reported by Dorris and Stunkard in the American Journal of Medical Sciences. They studied the degree of physical activity of overweight women as compared to those of normal weight. It was found that the overweight group, on the average, walked less than half as much as those in the normal weight group. Riedneau and associates demonstrated and noted in Medical Research and Nutrition Laboratory Report No. 209, Fitzsimons Army Hospital, the relationship of exercise to overweight in relation to food intake and physical activity of a group of high school girls. A comparison of the caloric intake of the overweight with that of the non-overweight revealed the surprising fact that the caloric intake of the overweight was lower. Both groups were relatively inactive, but the overweight girls spent much less time in physical activity than the normal weight girls.

That the mere participation in physical activity will necessarily make one physically fit is not to be concluded because many other facets are involved. However, it is a means by which one may attempt to achieve such a desired goal. Golf offers this means. Through such practices, exercise and general physical activity may become part of the way of life, promoting good health and preventing or delaying certain mental and physical disorders. (LTJG A. R. Tortora MC USNR, Benefits of Golf: Golf World, October 24, 1958)

U. S. Naval Medical Research Unit No. 2

The information quoted below is published to indicate, to a degree, some of the research work being conducted by this Unit.

"During March 1959, the U. S. Naval Medical Research Unit No. 2 conducted a very successful expedition to Lan Yü (Botel Tobago), a small island off the southeast coast of Taiwan. The group, directed

by Captain Francis M. Morgan MC USN and Commander Robert E. Kuntz MSC USN, continued geomedical and biological studies which are currently in progress on Taiwan and in countries of Southeast Asia.

The population which consists of aborigines of the Yami tribe, unlike others in the area, has remained more or less isolated through the years. Emphasis was given to a study of diseases, medical conditions, and the parasites in a sizable sample of the 1750 islanders. Dr. C.H. Chen of the Taipei Tuberculosis Control Center and Dr. Alan Penington, WHO Consultant, made an extensive survey for tuberculosis. Helminth parasites and blood smears were obtained from approximately 500 animals examined. "

(NMRU #2)

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